

feeding a feed stream having at least about 99.9 wt.% IPA into a separation column, and removing high purity IPA from a point in the separation column between the overhead stream and the bottoms stream to produce an IPA with less than 100 ppm water and less than 1 ppb metals content, as recited in claim 1. To the contrary, Adams produces ultradry and ultrapure IPA with a series of pervaporation and distillation steps, none of which remove high purity IPA from a point in the separation column below the overhead stream and above the bottoms stream, as recited in claim 1. To the contrary, the ultrapure and ultradry IPA produced by Adams is removed from the overhead stream in both distillation columns used.

Applicants respectfully submit that the claims are patentable over the cited references and that the 35 USC 103(a) rejection be withdrawn and a notice of allowability be issued.

With respect to Claim 10, the Examiner has objected to the term "ternary azeotrope" since pressures and temperatures are not specified. Applicants submit page D-21 of the Handbook of Chemistry and Physics, 49th Ed., 1968 (attached) as evidence that one of ordinary skill in the art would be aware of known ternary azeotropes of isopropanol, the characteristics of the azeotrope and how to perform the process of using a ternary azeotrope to remove water from isopropanol. Applicants are not required to supply that which is known to ordinary skill in the art. Applicants respectfully submit that Claim 10 as written is allowable and request reconsideration and withdrawal of the objection.

The Examiner has state in the Advisory Action: "As to the art rejections: however, the argued two-stage process of Kagiya, the process of using single vessel of Marker and the pervaporation followed by double distillation of Adams are not precluded by the claims recitation of 'comprising' which is an all-inclusive term." Applicants respectfully point out that this is not relevant to the issue of patentability and is not a proper basis for rejection of a claim. Applicants respectfully request reconsideration and withdrawal of this rejection.

The rejections related to Claim 11 are mooted by cancellation of Claims 11-20.

In summary, Applicants submit that the pending claims are clearly patentable over the cited references. It is respectfully submitted that the claims avoid the rejections set forth in the Office Action, and thus place the claims in condition for allowance. Reconsideration and withdrawal of all rejections of the claims are respectfully requested.

Respectfully submitted,

January 16, 2003

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(Attachment)



# Handbook OF Chemistry and Physics

A Ready-Reference Book of Chemical and Physical Data

FORTY-NINTH EDITION

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In collaboration with a large number of professional chemists and physicists whose assistance is acknowledged in the list of general collaborators and in connection with the particular tables or sections involved.

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**AZEOTROPES (Continued)**  
**TERNARY SYSTEM (Continued)**

No.	Components		Azeotrope					Components		Azeotrope				
	Compounds	B.P., °C	B.P., °C	Percent composition			Spec. grav. of azeotrope or layers	Compounds	B.P., °C	B.P., °C	Percent composition			Spec. grav. of azeotrope or layers
				In azeotrope	Upper	Lower					In azeotrope	Upper	Lower	
71	a. Ethanol b. Isopropyl ether c. Water	78.5 67.5 100.0	61.0	6.5 89.5 4.0	5.9 92.9 1.2	20.2 78.0	U 0.737 L 2.9 L 0.987	a. Isobutyl acetate b. Isobutyl alcohol c. Water	110.5 108.39 100.0	86.8	46.5 23.1 30.4			
72	a. Ethanol b. Water	78.5 100.0	62.0	8.6 85.1 6.3	8.1 89.6 2.3	17.0 2.2 80.8	U 0.743 L 4.0 L 0.95	a. Isopropanol b. Isopropyl acetate c. Water	82.3 82.0 100.0	75.5	13.0 76.0 11.0	11.5 2.9 85.6	U 94.0 L 6.0 L 0.981	
73	a. Ethanol b. Methyl ethyl ketone c. Water	78.5 79.6 100.0	73.2	14.0 75.0 11.0			0.832	a. Isopropanol b. Isopropyl ether c. Water	82.3 87.5 100.0	61.8	4.0 94.7 5.0	4.0 1.3 94.0	U 97.2 L 2.8 L 0.990	
74	a. Ethanol b. Propyl isopropyl ether c. Water	78.5 100.0	66.0	14.7 75.3 7.0	13.7 83.3 3.0	30.5 68.8	U 0.745 L 5.0 L 0.925	a. Isopropanol 776 mm b. Isopropyl ether c. Water	100.7 91.9 120.9	81.0	7.0 87.0 6.0	9.0 1.5 90.0	U 96.1 L 3.9 L 0.984	
75	a. Ethanol b. Toluene c. Water	78.5 110.6 100.0	74.4	37.0 51.0 12.0	15.6 81.3 3.1	54.8 24.7 20.7	U 0.849 L 53.5 L 0.865	a. Isopropanol b. Methyl ethyl ketone c. Water	82.3 79.6 100.0	73.4	1.0 88.0 11.0		0.834	
76	a. Ethanol b. Triethyl amine c. Water	78.5 89.5 100.0	74.7	15.0 75.0 10.0			0.774	a. Isopropanol b. Toluene c. Water	82.3 110.6 100.0	76.3	38.2 48.7 13.1	38.2 53.3 8.5	U 92.0 L 8.0 L 0.930	
77	a. Ethanol b. Vinyl isobutyl ether c. Water	78.5 83.4 100.0	60.0	22.0 70.0 8.0	20.8 77.6 2.1	88.7 3.6 57.7	U 0.777 L 9.0 L 0.90	a. Isopropyl ether b. Isopropanol c. Water	87.5 97.2 100.0	61.0	92.4 2.0 5.6	9.4 3.0 94.0	U 97.0 L 3.0 L 0.980	
78	a. Ethanol b. Vinyl isopropyl ether c. Water	78.5 65.1 100.0	57.0	21.2 73.7 5.1	20.6 77.8 1.6	32.0 0.2 67.8	U 0.792 L 4.5 L 0.923	a. Methanol b. Methyl ethyl ketone c. Water	64.65 131.5 100.0	67.9	81.20 13.54 5.26			
79	a. Ethoxy ethanol b. Vinyl-2-ethylhexyl ether c. Water	135.6 177.7 100.0	97.7	11.0 38.0 51.0	0.5 99.4 0.1	17.0 82.0	U 0.81 L 57.0 L 1.00	a. 2-Methoxy ethanol b. Vinyl-2-ethylhexyl ether c. Water	124.6 177.7 100.0	97.7	4.0 25.0 57.0	0.2 99.7 0.1	U 45.0 L 55.0 L 1.00	
80	a. Ethyl acetate b. Isopropanol c. Cyclohexane	77.1 82.3 81.0	68.3				homog.	a. Propanol b. Propyl acetate c. Water	97.2 101.6 100.0	82.2	18.5 45.5 21.0			
81	a. Ethylbutyl ether b. Isopropanol c. Water	92.2 82.3 100.0	73.4	67.7 21.9 10.4	73.1 22.5 4.4	0.5 14.5 85.0	U 0.762 L 5.0 L 0.97	a. Propanol b. Trichloroethylene c. Water	97.2 87.1 100.0	71.6	12.0 51.0 7.0		heterog.	
82	a. Ethylene dichloride b. Isopropanol c. Water	84.0 82.3 100.0	69.7	75.3 19.0 7.7	0.9 20.7 78.4		U 0.868 L 1.117	a. Propyl alcohol b. Propyl ether c. Water	97.19 91.0 100.0	74.8	20.2 68.1 11.7			
83	a. Hexano b. Methyl acetate c. Water	69.0 64.65 57.0	45.0	59.0 14.0 27.0			0.73							
84	a. Isomyl acetate b. Isomyl alcohol c. Water	142.5 130.5 100.0	93.6	24.0 31.2 44.8										